

Science Trailer

The Science Trailer is a one-stop field geology station that has been in use for Advanced Suit Lab field exercises for a couple of years, both at JSC and in Arizona. The general concept is to provide a roving geological field lab for the suited astronaut. It has always had the familiar geology “pick and shovel” instruments, as well as a power rock crusher to open samples and get to the “good stuff” inside. This second-generation roving lab has four-wheel independent suspension able to crawl over football-sized rocks with ease while keeping the lab platform and equipment relatively stable.

Equipment now onboard includes:

- front and rear video and infrared video for viewing and documenting the site being explored
- battery power with solar panel charging
- self-contained rock analysis chamber with halogen and ultraviolet lighting that projects onto the chosen sample
- QX3 computer microscope for inspection of rock samples

The sample is placed on a motorized turntable and viewed via an internal camcorder or the video microscope on a laptop display. This imagery can be stored and then transmitted to a base station along with verbal commentary by the astronaut.

The development and construction process intermittently involved the whole Advanced Suit Lab staff over a few months. Nathan Smith was primarily responsible for designing and building the trailer and the rock sample chamber. Various hardware and equipment mounting was accomplished by the rest of the lab staff. Shawn Davis, a cooperative education student in the lab, was instrumental in putting all of the wiring together and getting it to behave with the computer.

Submitted by the Science Trailer team: Joe Kosmo, Bill Welch, Edward Ehlers, Amy Ross and Barbara Janoiko.

Advanced Spacesuits

Two different advanced spacesuits were tested in Arizona:

- The MK III hybrid spacesuit, which combines a variety of lightweight composite torso elements with fabric and rotary bearing mobility joint systems. This suit represents the latest version of various advanced technology spacesuit mobility and structural elements that NASA has been extensively testing and evaluating over the past six years.
- The I-1 suit, developed for NASA by ILC Dover, Inc. This particular configuration incorporates an all-fabric torso and uses a limited number of rotary bearing elements in the shoulder, arm and hip joints.

Submitted by Joe Kosmo.



Kevin Groneman, wearing the I-1 spacesuit, is pictured here with the EC-5 Science Trailer near the edge of Meteor Crater in Arizona.

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JSC engineers perform interactive testing at remote site near Flagstaff, Ariz.

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Pictured above is a close-up view of the EC-5 Science Trailer.

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All Desert RATS 2003 photos in this story by Mark Sowa